MULTIMEDIA UNIVERSITY

STUDENT IDENTIFICATION NO

MULTIMEDIAUNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2015/2016

TSM2691 NETWORK SYSTEM FOR MULTIMEDIA

(All Sections / Groups)

30th MAY 2016
2:30 p.m. – 4:30 p.m.
(2 Hours)

INSTRUCTION TO STUDENTS

1. This paper consists of 3 pages with **SEVEN (7)** questions only.
2. Attempt **SIX** out of SEVEN questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the answer booklet provided.

QUESTION 1

a) A media stream can be *on-demand* or *live*.
   i) Differentiate between *on-demand* and *live*. (2 marks)
   ii) Give an example of situations suitable for *on-demand* and *live* stream. (2 marks)

b) A 360p video on Youtube is recommended to have a *bitrate* of 750 Kbps. What would be the streaming media storage size (in MB) for a 360p video that is an hour long? (2 marks)

c) List TWO (2) challenges of *multimedia networking*. (4 marks)

QUESTION 2

a) Differentiate between *plain text* and *rich text*. (4 marks)

b) What is the display resolution of a *greyscale* image requiring 38,400 Bytes? (2 marks)

c) Discuss TWO (2) features of *Tagged Image File Format* (TIFF) files. (4 marks)

QUESTION 3

a) Calculate the audio file size (in bytes) if the duration of a clip is 20 seconds, digitized at 16 bits, stereo and at a 44 kHz sampling rate. (2 marks)

b) Differentiate between *MIDI* and *Digital Audio*. (4 marks)

c) Calculate the digital video file size (in GB) given a *frame size* of 640 x 480, a *colour depth* of 24 bits, *frame rate* of 30 and a 5 minute video length. (2 marks)

d) List FOUR (4) most encountered video file formats on the web. (2 marks)

Continued...

QUESTION 4

a) Discuss any TWO (2) types of *compression.* (4 marks)

b) Illustrate and label the *Real-Time Protocol* (RTP) header. (3 marks)

c) Briefly explain the steps for *inter frame* video compression. (3 marks)

QUESTION 5

a) Compute the *min-max fair allocation* for a set of six sources with demands 3, 4, 5, 6, 8, 10 when the resource has a capacity of 30. (3 marks)

b) In the context of buffer scheduling, discuss the First-In First-Out (FIFO) algorithm. (3 marks)

c) Discuss TWO (2) *Synchronization Accuracy Specification* (SAS) factors. (4 marks)

QUESTION 6

a) List FOUR (4) factors that can reduce the *throughput* of a network. (4 marks)

b) *Quality of Service* (QoS) as applicable to multimedia applications is a set of parameters than can be assigned numerical values. State TWO (2) categories and their example parameters. (4 marks)

c) Define what *continuous event simulation* is. (2 marks)

Continued...

QUESTION 7

a) In the context of streaming multimedia, discuss *unicast* and *multicast*. (4 marks)

b) Define what *image resolution* is. Then state the ways image resolution can be specified. (4 marks)

c) According to *Nyquist sampling theorem*, how can sampling be done without loss of information? (2 marks)

End of Paper